Big South Fork NRRA
Annual Trail Management Scope of Work

Purpose: Each year, regular and routine trail system management is required on all designated horse, hiking, biking, and multiple-use trails through the park. Regular and routine trail system management will consist of clearing and brushing encroaching vegetation and blow-downs; cleaning and repairing drainage structures; repair of stairs, bridges, and other typical trail structures; tread repair; and repair or replacement of signs and blazes.

In the long run, regular and routine trail management preserves natural and cultural resources, is cost effective, and can keep our designated trails safe for the visitors that use them. Lack of trail system management will eventually lead to increased resource degradation, maintenance costs, and visitor accident rates. Note: During calendar years 1999-2002, Big South Fork National River and Recreation Area recorded 22 accidents along our trails that can be attributed to a lack of trail system management.

Safety: Safety will take precedence over all other considerations. No trail management or conservation work is worth risking the well-being of the Area's Trail Management Team. Given time, resources and ingenuity, every task realized in trail management can be accomplished with minimal risk to the Area's Trail Management Team.

Tools and Equipment: Hand tools such as loppers; weed whips; weed eaters; leaf blowers; Pulaski; McLeod; brush, pole & chain saws; shovels; picks; mattocks; etc., will be used to conduct trail management activities. Powered equipment such as all-terrain vehicles, mules, bulldozers, skid-steer loaders, backhoes, dump trucks, pickup trucks, mowers, etc., will also be used. Motorized equipment will not be allowed in the gorge without prior approval.

Clearing & Brushing Vegetation & Blow-downs: The goal of this scope is to restore the clearances specified for a trail corridor in the Road and Trail Classifications and Standards section of this plan. The "door technique" will be utilized to determine the areas to be cleared. To clarify, your door is as wide and high as needed for a desired right-of-way. As you walk down the trail, you have your door in front of you acting as a shield looking for branches or brush that touch the door. These are items that will be cleared.

Deciding what to remove and what to leave is best done when we take into account the psychology of the trail user. Hikers, horses and bicyclists tend to travel on the outside portion of the tread, keeping a cushion of distance between themselves and the back-slope. As a result, on some trails, we may want to remove brush only on the up-slope side of the trail so that users stay more to the center of the trail. User behavior also may mean we leave the vegetation untouched. Removing brush too far back can open a corridor that will entice users to travel side-by-side, thereby widening compacted tread. By leaving the vegetation untouched we can encourage single file travel.

With this information in mind, set forth below are tasks that the trails management team will undertake in each year as funding and staffing allow.

1. Branches, brush and vegetation extending into the trail corridor will be cut flush with the parent trunk, branch or stem, leaving no stub that could create bothersome and sometimes dangerous snags for packs and clothing.

2. Brushing in open grassy areas and along trails will be accomplished by using power mowers, bush hogs, etc., except where prohibited. Brushing will be in accordance with the Trail Classifications and Standards.

3. Small trees and shrubs within the trail will be grubbed or graded out to prevent tripping and holes will be filled.

4. Any downed trees lying on or over a trail will be removed unless it is a very large tree, in which case, just the portion lying across the trail will be removed.

5. Hazardous trees, i.e., all dead or dying trees that have a possibility of falling across the trail, will be felled by chain saw, cutting the stump as close as possible to the ground. In the event that the felled tree blocks the trail, it will be removed as indicated above. Since the dead trees are often home to many forest animals, the team will only remove them if they present an immediate danger to travelers.

Cleaning and Repairing Drainage Structures: Timely cleaning and replacement of drainage structures helps to prevent large scale soil erosion. Natural soil is one thing that cannot be replaced on a trail. If trail drainage structures are not maintained properly, the results will be cumulatively disastrous for the trail and natural and cultural resources on, around, and below the trail.

The physics involved in drainages are simple. Trails are a perfect place for water to travel, unimpeded, downhill. Water seeks the path of least resistance, and it finds much less resistance moving down a trail than moving down a slope in the woods where duff, roots, rocks, etc., obstruct and slow down its journey. Moving down the trail, water gathers speed and as more water joins in, a destructive torrent is formed that washes away precious soils and tread material. Exemplary trail management involves continual cleaning, maintenance, replacement, and protection of all drainage structures on a trail.

With this information in mind, below are tasks that the trail management team will perform each year as funding and staffing allow.

1. Water bars will be cleaned and repaired.
2. Deposited material that prevents water bars from draining will be recovered by back dragging with a bulldozer, backhoe or by hand.
3. Log water bars will be inspected for deterioration and replaced if needed, without disturbing any soil cover that was previously undisturbed by installation.
4. Usable material will be recovered from drainage areas from failed water bars or poor drainage and will be deposited back into trail tread without disturbing intact soils. Small logs will be installed in drainage areas caused by failed water bars to create a stop for silt run off and to ease recovery of usable materials in the future.
5. New water bars will be added where needed after consultation with and approval from the Resources Management Team.
6. Mulch will be applied to areas that are new or have been reworked.

Stair, Bridge, and Other Typical Structure Repair:. Load bearing structures made of wood must be maintained and inspected frequently for signs of decay or other deterioration to keep them in a safe, passable condition. Evidence of rot may require the dismantling and reconstruction of a bridge, stair, puncheon, etc.

With this information in mind, below are the tasks that the trails management team will perform each year, as funding and staffing allow.

1. Load bearing structures will be inspected annually for deterioration.
2. Unsafe structure(s) will be replaced. If replacement is deferred, an alternative trail route may be provided after consultation with and approval from the Resources Management Team
3. Remove organic material, which holds moisture and causes decay, from surfaces
4. Turn over planks to extend their useful life.
5. Drive nails or spikes flush so they will not trip hikers.
6. Reshape the approaches by crowning the tread and smoothing out the transition to help with drainage and to keep from tripping hikers.

Tread Repair: Tread is the actual travel surface of the trail. Tread is constructed and maintained to support the designed use of the trail. Most trail construction and maintenance revolves around making sure solid, obstacle free tread is established and enough protection is provided to keep it in place.

Most of our trails suffer from "Tread Creep," which consists of tread surfaces that have been eroded and compacted by travel along the lower edge. Tread creep also exposes roots and bedrock and sometimes leads to social trails. Tread Creep needs to be contained or the trails will eventually become very difficult or dangerous to travel.

What causes trail creep? Most horses, two-wheeled traffic, and hikers have a natural tendency to walk on the outside edges of side-hill trails. Sloughing makes the edge the flattest part to walk. As the tread moves downhill it also narrows, resulting in more traffic traveling closer to the outer edge, exacerbating the problem. Other causes are constructing a trail that is too narrow or with outslope that is too steep.

The trail management team's job is to bring the trail back uphill and keep it there. With that in mind, below are tasks that the trails management team will perform each year, as funding and staffing allow.

1. Tread will be restored to the original design condition. Large Stationary objects or guide structures, as they become available, e.g. logs, rocks, etc., will be left close to the downhill edge of the trail, which will keep horses, bicycles and hikers toward the center of the trail. These guide structures will be no taller than 1 foot.
2. Tread maintenance will be accomplished by using hand tools, tractors with blade or rake, bulldozer, ATV's, dump trucks, etc., (except where prohibited).
3. Crusher run stone or red dog will be used to stabilize mud stands or high erosion areas.
4. Any roots protruding into the trail tread will be removed.
5. After grading trails, any troughs that are left will be raked down so water will drain to the down-slope side.
6. Any disturbed area outside the tread will be mulched to prevent erosion.

Sign and Blaze Repair or Replacement:

1. All signs damaged or weathered so that they no longer serve the intended purpose will be repaired or replaced.
2. Blazes will be replaced or refurbished as needed.

Reference Material:

Demrow, Carl & Salisbury, David; *The Complete Guide to Trail Building and Maintenance*. 3rd Edition; Appalachian Mountain Club Books, Boston MS ISBN 1-878239-54-6 1998

Birkby, Robert C. *Lightly on the Land: The Student Conservation Association Trail-Building and Maintenance Manual*. 3rd edition; Seattle WA ISBN 0-89886-491-7 1998

Hesselbart, Woody and Vachowski, Brian; *Trail Construction and Maintenance Handbook*. U.S. Dept. of Agriculture, Forest Service, Missoula MT; Missoula Technology and Development Center, 1996 (Revised 1999)